Code No: G6806/R13

M. Tech. I Semester Supplementary Examinations, Jan/Feb-2018

DIGITAL SYSTEM DESIGN
(Common to VLSI & ES, ES & VLSI, VLSID & ES, ES & VLSID, VLSI, VLSID, VLSISD, VLSI&ME, ES, DE&CS, E&CE and DECE)

Time: 3 hours **Max. Marks: 60**

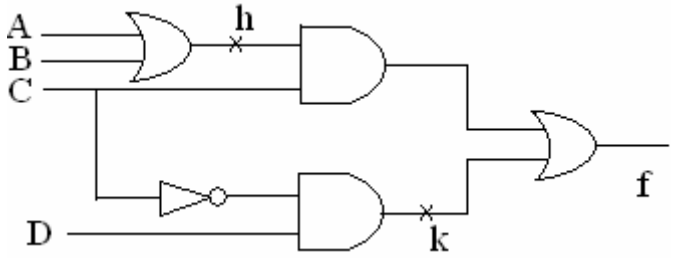
Answer any FIVE Questions
All Questions Carry Equal Marks

1. a Find the CAMP printout when it minimizes the following given function 6M
F (a, b, c, d) = ΠM (2, 4, 9, 15)
b The cubical form of a Boolean function is given below 6M
F = 0112 + 1002 + 1221 + 2112 Find all intersecting pairs of cubes without help of a k-map.

2. a What are the various programmable logic devices? Compare them 4M
b Implement the following Boolean functions using PAL 8M
F1 (X, Y, Z) = ∑ (1, 2, 4, 6) F2 (X, Y, Z) = ∑ (0, 1, 6, 7) F3 (X, Y, Z) = ∑ (2, 6)

3. a Draw the general structure of a CPLD and explain how a logic function can be realized on CPLD with simple example. 6M
b Design an ASM chart for a serial adder with accumulator and show the control block diagram. 6M

4. a Find all the tests to detect h SA0 and k SA1 faults by applying path sensitization technique to the given circuit below. 6M



b List out the properties of Boolean difference method? 6M

5 a Find a preset distinguishing experiment that determines the initial state of the machine shown in table. Given that it cannot be initially in state E. 6M
b Can you identify the initial states when the initial uncertainty is (ABCDE)? 6M

Ps	Ns, z x=0 , x=1
A	B,1 A,1
B	E,0 A,1
C	A,0 E,1
D	C,1 D,1
E	E,0 D,1

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6. Determine the essential prime cubes for the following four variable single output function using IISc algorithm 12M
   f = 0200 + 1102 + 2201 + 0011 + 0010

7. a What are the basic building blocks of an ASM chart? Draw the ASM chart of a SR flip flop. 6M
   b Describe briefly the various DFT schemes used in digital systems? 6M

8. a Discuss in detail about reduction of state tables and state assignments. 6M
   b Explain briefly about Passport checking in CAMP algorithm with suitable example. 6M

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